ASA GRAY.

THE following, as yet unpublished, words, almost the last spoken publicly by Asa Gray, have a pathetic interest for all those who knew and loved him. They were uttered in the Free Trade Hall, at Manchester, at the opening meeting of the British Association in August last, in seconding the vote of thanks to Sir Henry Roscoe for his address :—

"For the very great honour of being called upon to second the motion for a vote of thanks to your illustrious President, I am mainly indebted to that deference which is naturally accorded to advancing years, a deference which sometimes—as in the present case—takes one unawares.

'In looking back over the list of Corresponding Members of the British Association, I find myself, much to my surprise, nearly, if not quite, the oldest survivor.

"I recognize, therefore, a certain fitness, on this score, in the call upon me to be the spokesman of those, your brethren from other lands, who have been invited to this auspicious gathering, and to the privilege of listening to the very thoughtful, well-timed, and most instructive address of your President.

"As guests, we desire, Mr. Mayor, heartily to thank the city of Manchester and the officers of the Association for inviting us ; we wish to thank you, Sir Henry, for the gratification your address has afforded us.

"Convened at Manchester, and coming myself by way of Liverpool, I would say personally that there are two names which memory calls up from the distant past with unusual distinctness ; both names familiar to this audience and well known over the world, but which now rise to my mind in a very significant way. For I am old enough to have taken my earliest lessons in chemistry just at the time when the atomic theory of *Dalton* was propounded, and was taught in the text-books as the latest new thing in science.

"Some years earlier, Washington Irving in his "Sketch-book" had hallowed to our youthful minds the name of *Roscoe*, making it the type of all that was liberal, wise, and gracious. And when I came to know something of botany I found that this exemplar, as well as patron, of good learning had, by his illustrations of Monandrian plants, taken rank among the *Patres Conscripti* of the botany of that day.

"The name so highly honoured then we now honour in the grandson. And I am confident that I express the sentiments of your foreign guests, whom I represent, when I simply copy the words of your President in 1842, now reproduced in the opening paragraph of the address of the President of 1887, transferring, as we fitly may, the application from the earlier to the later Manchester chemist : 'Manchester is still the residence of one whose name is uttered with respect wherever science is cultivated, who is here to-night to enjoy the honours due to a long career of persevering devotion to knowledge.'

"I cannot continue the quotation without material change. 'That increase of years to him has been but increase of wisdom' may indeed be said of Roscoe no less than of Dalton ; but we are happy to know that we are now contemplating not the diminished strength of the close, but the manly vigour of the mid-course, of a distinguished career Long and prosperously may it grow from strength to strength.

"In general, praise of the address which we have had the pleasure of hearing would not be particularly becoming from one whose chemistry nearly ended as well as began with the simple atomic theory of Dalton. But there is one topic which I may properly speak of, standing as I do as a representative of those favoured individuals whom your programme—for lack of a better distinguishing word —calls foreigners. I refer to the urgently expressed 'hope that this meeting may be the commencement of an international scientific organization.' For this we thank you, Mr. President, most heartily. This is, indeed, a consummation devoutly to be wished, and confidently to be hoped for, by all of us, especially by those for whom I am speaking. Not only we Americans, who are of British descent, and who never forget that blood is thicker than water, but as well our Continental associates on this platform, of the various strains of blood which interfused have produced this English race and fitted it for its noble issues—we, each and all, I repeat, accept this name of foreigners only in the conventional sense which the imperfection of language imposes. In the forum of science we ignore it altogether. One purpose unifies and animates every scientific mind with 'one divine intent,' and that by no means the 'far-off intent' of which the poet sings, but one very near and pervading. So we took to heart the closing words of your President's most pertinent and timely address. Indeed, we had taken them to heart in anticipation. And we have come to this meeting one hundred strong or more (in place of the ordinary score) fully bent upon making this Manchester meeting international.

"Far back in my youthful days there was a strong-willed President of the United States, of military antecedents, who once drew up and promulgated an official order which somewhat astounded his Cabinet officers. 'Why, Mr. President !' they said, 'you can't do that.' 'Can't do it !' replied General Jackson, 'don't you see that I have done it ?' And so we internationals have come and done it. I am the unworthy spokesman of such a numerous, and such a distinguished array of scientific foreigners as have never been assembled before.

"Next year, if you will, you shall have as many more. When you, too, are ready to cross the Channel or the North Sea, we shall compose only a larger scientific brotherhood. And when you cross again the Atlantic, the brotherhood of science will be the more increased, and its usefulness in proportion.

"In behalf of your foreign guests, I heartily second the motion."

NOTES.

FIFTEEN years have passed since the Marshall Hall Fund was instituted with the twofold purpose of commemorating the late Dr. Marshall Hall, and for the encouragement of research in that branch of natural science which he did so much to develop. The Trust provides "that a prize shall be given every fifth year for the best original work done and recorded in the English language during the previous quinquennium, in physiological or pathological researches relating to the nervous system, and that the prize shall consist of the simple interest derived during the preceding five years from the amount of the capital fund." The first award was made to Dr. Hughlings Jackson, the second to Dr. Ferrier, and this year the Council of the Royal Medical and Chirurgical Society, in whose hands the Fund was placed, have awarded the prize to Dr. Walter Holbrook Gaskell, F.R.S., Lecturer in Advanced Physiology in the University of Cambridge. The Council have invited Dr. Gaskell to give some account of his work before the Society, and a special meeting will be convened for this purpose.

MR. MATTHEW ARNOLD, the tidings of whose death excited universal regret, did admirable service to the cause of education in England. No writer of his time pressed more earnestly on the attention of the public the need of thorough educational reform, and in his full and lucid Report on the Universities and secondary schools of the Continent he showed how far, in almost all matters relating to this essential element of the national life, we had allowed ourselves to be outstripped by some of our neighbours and rivals. Although, of course, convinced that classical studies must be maintained in our schools and Universities, and personally interested chiefly in this aspect of the subject, Mr. Arnold frankly recognized the great place that must necessarily belong to science in any true system of education.

WE print elsewhere a letter from Emin Pasha. Other letters from him have lately appeared in the *Times* and the *Scotsman.* His province is evidently once more in working order, and Emin is at peace with his neighbours. The letters took eight months to reach this country, so we need not be alarmed by the fact that no word has come of Mr. Stanley's arrival. Emin tells us that the country through which Mr. Stanley had to pass is of the most difficult character, full of swamps, and with rivers rendered impassable by vegetation; so that the expedition could not reach the Albert Nyanza before November.

SO many new garden plants are annually described in various English and foreign periodicals that some are apt to escape the notice of botanists and horticulturists. From 1860 to 1886 a list was regularly published in the Gardener's Year-Book and Almanac; and during the months of January to May 1887 inclusive the *Journal of Horticulture* gave the names of plants up to October 1886. No later list has appeared. Now it has been decided that a list shall henceforth be given as one of the regular issues of the Kew Bulletin of Miscellaneous Information, and the first of the promised series is presented in the April number. It includes the new garden plants and alterations of names recorded between October 1, 1886, and December 31, 1887. To these have been added the names of authors, which did not appear in former lists. The list will be of great service to horticulturists.

ON April 8 a beautiful display of the aurora borealis was observed at Throndtjem. The weather was fine, and there was no wind.

ON March 12, at about 2 a.m., a faint shock of earthquake, accompanied by subterranean rumbling, was felt at Drammen, in Norway. It went from east to west.

A SEVERE earthquake occurred at Linthal (Canton Glarus) on April 2, at 9.10 a.m. At Elm the oscillations were so strong that the walls of the houses were cracked.

ON the evening of Wednesday, the 11th inst., shocks of earthquake were felt in various parts of North Wales. At the large Baptist Chapel, Llangollen, while service was proceeding, a shock was distinctly felt, and the walls and ground were seen to shake. Shocks were also experienced at many of the residences in the valley, where the crockery and windows quivered in their places. A farmer residing at the Craig said his farmstead shook so much that he expected it to fall. The shocks were also noticed at Corwen, Bala, and Dolgelly.

SOME months ago a Conference was held in Manchester with the object of promoting the interests of the silk industries of the United Kingdom. Various papers were read, and it was ultimately resolved that an Association, to be called the Silk Association of Great Britain and Ireland, should be formed. The objects of the Association are to promote and maintain the silk industry of Great Britain and Ireland in all its branches; to encourage the production of raw silk in India and our colonies; to collect and disseminate amongst its members useful information and statistics connected with or affecting manufacture and commerce in silk; and to promote technical, commercial, and linguistic education, and any necessary Parliamentary legislation; and generally to assist in the expansion and development of the trade. The Association was "inaugurated" at Manchester on March 22, and will hold a general meeting in London in June.

IT is announced from Lyons that M. de Chardonnet has succeeded in getting by chemical processes a matter having all the appearance of silk. He adds to an etherized solution of nitrated cellulose (the base of gun-cotton) a solution of perchloride of iron, and to this mixture a little of a solution of tannic acid in alcohol. The whole is poured, after filtration, into a vertical reservoir having a horizontal sharp nozzle (with fine passage) at its base, debouching in a vessel of water acidulated with nitric acid. The issuing fluid vein at once becomes consistent, and can be drawn off by a uniform movement. It is dried by passage through a dry air space, and then wound. It is of gray or black aspect; but by means of colouring matter put in the etherized solution the colour may be varied *ad lib.* It is further described as supple, transparent, cylindrical or flattened; of silky appearance and touch; the rupturing weight is 25 kilogrammes per square millimetre. The fibre burns without the flame being propagated; it is unattackable by acids and alkalies of mean concentration, by cold or hot water, alcohol, or ether; but it is dissolved in etherized alcohol and acetic ether.

AN attempt was made last year to cultivate the cotton-tree in European Russia, in the neighbourhood of Taganrog, on the Don. We learn that the attempt proved successful, the temperature of the Lower Don being not inferior to that of the valleys south of the forty-first degree of latitude, where the cotton-tree is cultivated in Turkey.

THE Board of Trade Journal for April contains a paper in which there are some interesting facts about sponge-fisheries. It seems that an industry in artificial sponges is in process of creation. M. Oscar Schmidt, Professor at the University of Gratz, in Styria, has invented a method by which pieces of living sponge are broken off and planted in a favourable spot. From very small cuttings of this kind, Prof. Schmidt has obtained large sponges in the course of three years, and at a very small expense. One of his experiments gave the result that the cultivation of 4000 sponges had not cost more than 225 francs, including the interest for three years on the capital expended. The Austro-Hungarian Government has been so much struck with the importance of these experiments, that it has officially authorized the protection of this new industry on the coast of Dalmatia.

ACCORDING to *Allen's Indian Mail,* arrangements are now being made by the Meteorological Department of India for the prompt publication of a regular series of cyclone reports, so as to admit of their issue from two to three months after the date of the storm to which they refer. Hitherto, accounts of cyclones have not been published for a year or two after their occurrence.

THE *American Meteorological Journal* for March contains the first of a series of articles by Mr. A. L. Rotch on the organization of the Meteorological Services of Europe, based upon a similar series by Dr. Hellmann, about ten years ago, with the addition of subsequent changes. The first country dealt with is Germany. Of the other articles may be specially mentioned one by Mr. W. M. Davis, on a proposed classification of the winds, according to their physical causes and conditions. The characteristics employed are: (1) the source of energy that excites motion (earth, sun, &c.); (2) the contrasted temperatures (equator, poles, &c.); (3) the period of occurrence; (4) the kind of wind (cyclonic, sea-breezes, &c.). By this means, although no claim to novelty is made, except as to the arrangement of the data, the author proposes to bring together what is known into a convenient shape, and so to separate the unsorted material for further critical examination. Prof. H. A. azen continues the controversy between Dr. Hann and himself as to the behaviour of pressure and temperature in high and low barometric areas, at elevated stations; his theory being that the low temperature in a cyclone at a mountain station is due to the lagging behind of the minimum pressure, and similarly with respect to the high temperature in an anticyclone.

AN interesting paper is contributed to the April number of the Journal of the Chemical Society by Mr. Ward Couldridge on chlorophosphide of nitrogen. This peculiar compound was shown some years ago by Dr. Gladstone to be represented by the empirical formula $PNCl_2$, but vapour-density determinations revealed the curious fact that in the gaseous state its molecule really possesses the constitution $P_3N_3Cl_6$. Mr. Couldridge prepares it by a method somewhat different from that employed by Dr. Gladstone, and one which gives a better yield. Pentachloride of phosphorus is heated with chloride of ammonium in a flask connected with an upright condenser, so that the pentachloride volatilized returns to the seat of action until it becomes completely decomposed, and the chlorophosphide, which would otherwise be carried away by the escaping hydrochloric acid, crystallizes in the condenser. The whole of the chlorophosphide is subsequently purified by distillation in steam. The reaction is found to be as follows: $3PCl_5 + 3NH_3 = P_3N_3Cl_6 + 9HCl$. Chlorophosphide of nitrogen thus prepared dissolves readily in ether, chloroform, or carbon bisulphide, and separates on evaporation in fine rhombic crystals, which have a most remarkable aversion to water, refusing under any circumstances to be wetted by it. When fused and heated above its boiling-point, it emits a singular odour. It has the proud distinction of being unattacked by all the strong acids, hot fuming nitric alone being capable of making any impression upon it. Mr. Couldridge finds that when dry ammonia gas is led through a hot tube containing the melted chlorophosphide, a somewhat violent reaction occurs resulting in the formation of another remarkable compound known as phospham, $P_3H_3N_6$ or $P_3N_3(NH)_3$. Not only does ammonia behave in this way, but all substituted ammonias, such as the amines, form similar compounds; aniline, for instance, gives a white solid, readily crystallizable from glacial acetic acid, of the composition $P_3N_3(NH \, . \, C_6H_5)_6$. Phospham itself is both insoluble in water and infusible at a red heat, but fumes in contact with air, owing to slow decomposition and oxidation. One cannot help remarking how singular it is that the introduction of phosphorus, itself a notable combustible, into the terribly explosive compound of chlorine and nitrogen, should result in the formation of a substance so extremely inert as the chlorophosphide; yet such are the vagaries met with by the chemist.

A SECOND edition of Prof. C. M. Tidy's "Hand-book of Modern Chemistry, Inorganic and Organic," for the use of students, has been issued by Messrs. Smith and Elder. As regards general arrangement, the author has adhered to the plan he first adopted. He especially notes that in writing of chemical compounds he has at times not hesitated to use common language. "If," he says, "I have used the word 'potash,' and the body I mean to imply thereby is understood, I am satisfied. I confess that the growing necessity for having a translation at one's side in attempting to understand the modern scientific paper, is in my opinion a circumstance to be deplored. Danger, moreover, is always to be apprehended when a language has to be invented to support a theory or a formula. A party shibboleth has, no doubt, a charm for its special clique. It serves as a bond of union for the initiated, whilst it prevents the interference of outsiders. But, all the same, it is distracting to the independent worker, and can but prove a hindrance to the general cultivation of science."

MESSRS. G. BELL AND SONS will shortly publish "The Building of the British Islands," a study in geographical evolution, by Mr. A. J. Jukes-Browne. The author tries to restore the geography of the British region at successive epochs of geological time, and to describe the gradual formation or evolution of the British Isles. The book will be illustrated by maps.

MESSRS. ROPER AND DROWLEY will publish immediately "Geology for All," by Mr. J. Logan Lobley, Professor of Physiography at the City of London College, and author of several volumes on geological subjects.

THE valedictory address delivered by Mr. J. W. Taylor as President of the Conchological Society has been reprinted from the *Journal of Conchology*, and issued separately. Mr. Taylor brings together some interesting observations bearing on the variation of British land and fresh-water Mollusca.

MR. THOMAS WILSON, of the Smithsonian Institution, calls attention in the *American Naturalist* to the fact that the importance of the subject of criminal anthropology has not hitherto been so thoroughly appreciated in the United States as in Europe. A step in the right direction, however, has been taken by the New York Academy of Anthropology, which lately held a meeting for the consideration of questions connected with criminal anthropology. These questions were classed under two heads, criminal biology and criminal sociology. In the circular summoning the meeting it was contended that the true way of studying crime is to begin with the study of the criminal himself. "It is impossible," said the writer, "to evolve the criminal out of one's inner consciousness. Knowledge of his peculiarities is essential to any rational treatment of him, and this knowledge can only be gained by systematic, intelligent observation of his physical and mental habits, supplemented by an exhaustive analytical comparison of the facts observed, with a view to their right classification and interpretation."

THE Mitchell Library, Glasgow, has now been ten years in existence, and the Committee, in the Annual Report just issued, express the belief that no consulting or reference library has ever made so much progress in so short a time. Speaking of the character of the reading, they say that it continues satisfactory, and bears evidence of a desire on the part of readers to seek solid information from the abundant resources at their disposal. Unfortunately, the Committee have to report that during 1887 twenty-one books were stolen.

THE Royal Microscopical Society will hold a *conversazione* on Wednesday evening, the 25th inst.

AN Aëronautical Exhibition was opened at the Rotunde in the Prater at Vienna on April 1.

THE additions to the Zoological Society's Gardens during the past week include an Arabian Baboon (*Cynocephalus hamadryas* ♀) from Massowah, presented by Mr. D. Wilson-Barker, R.N.R., F.Z.S.; two White-necked Crows (*Corvus scapulatus*), two Spotted Eagle-Owls (*Bubo capensis*) from South Africa, presented by Captain Henry F. Hoste, s.s. *Trojan*; a Muscovy Duck (*Cairina moschata*) from South Africa, presented by Mr. W. Shuter; four Half-collared Doves (*Turtur semitorquatus*) from Africa, presented by Mrs. Wisely; a Slowworm (*Anguis fragilis*), British, presented by Mr. F. W. Pilkington; two Indian Swine (*Sus cristatus* ♂ ♂) from India, a Greater Vasa Parrot (*Coracopsis vasa*) from Madagascar, a Blue-eyed Cockatoo (*Cacatua ophthalmica*) from South Australia, a Goffin's Cockatoo (*Cacatua goffini*) from Queensland, an Asp Viper (*Vipera aspis*) from Italy, deposited; four European Pond Tortoises (*Emys europæa*), European, purchased; two Collared Fruit Bat *Cynonycteris collaris*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

HARVARD COLLEGE OBSERVATORY.—The most interesting item in the forty-second Annual Report of the Director of the Harvard College Observatory is the account of the threefod accession to its resources which it has received during the past